

## Outstanding Projects of 2004

Four projects in this year's annual progress report exemplify outstanding coordination, design, and implementation:

- Edson Fichter Nature Wetland Project
- Hailey Big Wood River Enhancement Project
- Mud Creek BMP Implementation Project
- Thomas Fork Stream Restoration Project

Summaries for each of these outstanding projects are presented in the following sections.

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## Mud Creek BMP Implementation Project

### Introduction

The main goals of the Mud Creek Best Management Practices (BMP) Implementation Project are to reduce contributing nonpoint phosphorus loading and sedimentation being added to Cascade Reservoir by poor grazing practices along Mud Creek. This project will help meet the Cascade Reservoir Watershed Management Plan's (CRWMP) goal of decreasing the nonpoint source phosphorus loading by thirty percent.

### Background

The Cascade Reservoir Watershed, located in the Payette River Basin of southwestern Idaho, was identified as water quality limited—according to the rules of section 303(d) of the Clean Water Act—in June 2000. The Mud Creek subwatershed, a major tributary to the reservoir, consists of predominantly open, flat agricultural land in which grazing practices and many irrigation ditches and diversions present sources of pollution.

The section of the Mud Creek subwatershed of interest for this project includes a roughly 7,000 ft stretch within a private landowner's property, approximately one and a half miles northwest of Cascade Reservoir. The land is located on Section 5 of the Donnelly and Lake Fork quad maps, west of Norwood Road and south of Nisula Road. Other private ranchers own the land to the north and south of this property.

### Project Goals

Goals for this project included the following:

- Reduce total phosphorus and sediment loading to Cascade Reservoir.
- Reduce stream bank erosion caused by livestock.
- Improve riparian habitat for cold-water biota and wildlife.
- Raise awareness and accountability of Valley County ranchers to some of the grazing practices that are having detrimental effects on fish and wildlife habitat.
- Use the project as a public education tool, monitoring the project area before and after the BMPs are implemented to show rehabilitation progress.

### Pollutant Issue

Poor grazing management practices are the primary source of pollutants targeted by this project; Mud Creek has been an unrestricted source of water and forage for livestock, resulting in the following:

- The shearing action of livestock hooves on stream banks has destabilized the soil and greatly increased the potential for erosion and sediment release into the creek.

- Grazing cattle have substantially reduced riparian vegetation, especially riparian shrubs, decreasing stream bank stability and depositional areas for sediment and increasing water temperatures.
- Vegetation is over-grazed in pastureland and is insufficient to retain sediment and absorb nutrients (dissolved phosphorus) during overland flow events.
- Current grazing practices contribute to nutrient loading through the deposition and transport of animal waste.

### Treatment

The following Best Management Practices (BMPs) focus on restoring degraded riparian areas and modifying current grazing practices to reduce negative impacts. Their implementation will remove 15 kg of phosphorus and 87 tons of sediment from Cascade Reservoir each year.

- **Bridges**—Three bridges will be built next season, providing cattle passage to pastureland across creek. Bridges drastically reduce stream bank erosion by providing an elevated passage for cattle and ranch equipment to cross the creek without causing soil compaction, streambank erosion, nutrient introduction or overutilization of riparian vegetation. Fencing will direct cattle over the bridge and safely through the riparian corridor.
- **Fencing**—Fencing will exclude livestock from the riparian corridor, allowing regrowth of over utilized vegetation. A barbed wire laydown fence will have wildlife friendly wire spacing. Cattle will be excluded from the riparian corridor for three to four years, until full recovery of the vegetation and streambanks is achieved. Controlled grazing will be prescribed to maximize the health of riparian vegetation after recovery.
- **Stream bank stabilization**—Seventeen ELWd® structures—engineered alternatives to woody debris—were installed on seven badly eroded banks in October 2003 by forty students from the advanced biology class at Cascade High School. These structures will stabilize stream banks, reduce soil erosion, and restore stream morphology.
- **Riparian herbaceous cover**—About 230 native willows and alders, with established six-inch root systems, were planted in and around the ELWd Structures in late October 2003. The establishment of woody plants provides erosion control, consumes soil and water borne chemicals and nutrients, provides passerine habitat and ungulate cover, and decreases water temperatures. Once the ELWd structures erode away (in about ten years), the willow root systems will continue to stabilize the banks.
- **Grazing management plan**—In order for the riparian BMPs to be fully effective, there must also be sound grazing management on the uplands. The riparian corridor alone cannot protect the health of the subwatershed because it will become overwhelmed with sediment and nutrient loading. The prescribed grazing plan will consist of rest rotations, leaving a specified stubble height, irrigation water management, etc.

October 2004 Semi-annual Progress Report:

In the October 2004 semi-annual progress report, the following aspects of the project were noted:

- **Photo monitoring**—Photos were taken at identical photo points at the beginning of the grazing season in June 2004 and will be compared to photos to be taken next year.
- **Breeding bird surveys**—A survey of breeding birds was conducted in June 2004, along the existing transect line. This data will be compared to data from future surveys.
- **Water quality monitoring**—Cascade High School students continued to take water quality samples at the northern and southern test sites on Mud Creek.
- **Fencing**—Riparian fencing line and gate locations were flagged. The contractor is currently building fence and is expected to complete work by December 1, 2004.
- **Grazing management plan**—Working with NRCS in Emmett to create a “Conservation Plan,” project staff came out for a site visit and expect to complete a plan sometime this winter. The final plan should include a grazing rotation schedule, crossing fencing plan, pastureland re-establishment, and irrigation upgrade.



Figure 30. Students installing ELWd Structures along Mud Creek.



Figure 31. Mud Creek stream bank before and after ELWd Structures were installed.